

ERSHLER, A.B.; TEDORADZE, G.A.; MAYRANOVSKIY, S.G.

Effect of the adsorption of organic substances on the kinetics
of their electroreduction. Dokl. AN SSSR 145 no.6:1324-1327
Ag '62. (MIRA 15:8)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N.
Frumkinym.
(Organic compounds) (Adsorption) (Reduction, Electrolytic)

TEDORADZE, G.A.; ERSHLER, A.B.; MAYRANOVSKIY, S.G.

Effect of the adsorption of reducing substances on the kinetics of electrode process. Report No.2: Electrochemical behavior of benzyl chloride. Izv.AN SSSR.Otd.khim.nauk no.2:235-240 F '63.
(MIRA 16:4)

1. Institut elektrokhimii AN SSSR.
(Toluene) (Reduction, Electrolytic)

ERSHLER, A. B.; DZHAPARIDZE, D. I.; TEDORADZE, G. A.

Shape of $i-t$ curves in the region of polarographic maxima. Zhur.
fiz. khim. 37 no. 3:666-668 Mr '63. (MIRA 17:5)

1. Institut elektrokhemii AN SSSR.

ZOLOTOVITSKIY, Ya.M.; TEDORADZE, G.A.; ERSHLER, A.B.

Effect of large surface coverages in the electrochemical reduction
of dipyriddyethylene on mercury. Elektrokimiia 1 no.7:828-832
Jl '65. (MIRA 18:10)

1. Institut elektrokimii AN SSSR.

TEDORADZE, G.A.; KOLOTOVITSKIY, Ya.M.; ERSHLER, A.B.

Adsorption effects in the electrochemical reduction of
1,2-dipyridylethylene on mercury. Elektrokhimiya 1 no.10:1280-
1287 0 '65. (MIRA 18:10)

1. Institut elektrokhemii AN SSSR.

TEDORADZE, G.A.; ERSHLER, A.B.

Effect of the high degree of surface filling in electrochemistry.
Usp.khim. 34 no.10:1866-1878 O '55.

(MIRA 18:11)

1. Institut elektrokhimii AN SSSR.

ERENLER, A.B.; BELOKOLOS, Ye.D.; TEDORADZE, G.A.

Effect of the adsorption of organic substances on the kinetics of its electrochemical reduction at small surface coverage of the electrode. Elektrokhiimiia 1 no.12:1429-1433 D '65.

(MIRA 1961)

1. Institut elektrokhiimii AN SSSR. Submitted April 28, 1965.

ERSHLER, E., inzhener.

Conference on modern problems in concrete technology. Stroi.mat.
3 no.2:29 F '57. (MIRA 10:3)
(Moscow--Concrete)

ERSHLER, E. inzh.

Physical methods of testing qualities of porous building materials.
Steril. mat. 4 no. 11:15-17 N '58. (MIRA 11:12)
(Building materials--Testing)

KUDRYASHEV, I.T., kand.tekhn.nauk. Prinimali uchastiye: POPOV, N.A., prof., doktor tekhn.nauk; YEROFEYEVA, Ye.A., kand.tekhn.nauk; GORYAINOV, K.E., doktor tekhn.nauk; VOLCHEK, I.Z., kand.tekhn.nauk; KUPRIYANOV, V.P., kand.tekhn.nauk; YAKUB, I.A., kand.tekhn.nauk; KEVESH, P.D., kand.tekhn.nauk; ~~ERSHLER, E.Ya.~~, inzh.. KHAVIN, B.N., red.isd-va; STEPANOVA, E.S., tekhn.red.; SOINTSEVA, L.M., tekhn.red.

[Technical instructions for the manufacture of prefabricated elements from cellular autoclave concrete] Tekhnicheskie uslovia na izgotovlenie sbornyykh izdelii iz avtoklavnykh iacheistykh betonov. Moskva, Gos.isd-vo lit-ry po stroit., arkhitekt., i stroit.materialam, 1959. 79 p. (MIRA 12:6)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut betona i zhelezobetona, Perovo. 2. Nauchno-issledovatel'skiy institut betona i zhelezobetona Akademii stroitel'stva i arkhitektury SSSR (for Kudryashev). 3. Moskovskiy inzhenerno-stroitel'nyy institut imeni V.V.Kuybysheva, (for Popov, Yerofeyev). 4. Nauchno-issledovatel'skiy institut po stroitel'stvu Ministroya RSFSR (for Goryainov, Volchek, Kupriyanov, Yakub). 5. Nauchno-issledovatel'skiy institut zhelezobetona Glavmoszhelezobetona (for Kevesh, Ershler). 6. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Popov).
(Precast concrete)

ERSHLER, E.Ya., inzh.

Testing physical and technical properties of perhydrol-based
aerated concrete using electronic instruments. Trudy NIIZHB
no.8:213-218 '59. (MIRA 13:4)

1. Vsesoyuznyy gosudarstvennyy nauchno-issledovatel'skiy
institut zhelezobetonnykh detaley i konstruktsiy.
(Lightweight concrete--Testing) (Electronic instruments)

KEVESH, P.D., kand. tekhn. nauk; ERSHLER, E.Ya., ipzh.; KUPRIYANOV, V.P.,
kand. tekhn. nauk, nauchnyy red.; TYUTYUNIK, M.S., red. izd-va;
BOROVNEV, N.K., tekhn. red.

[Air-entrained concrete made from perhydrol]Gazobeton na pergidrole.
Moskva, Gosstroizdat, 1961. 111 p. (MIRA 14:11)
(Air-entrained concrete)

ERSHLER, E.Ya., inzh.

Effect of the liberation of heat from cements on conditions of
steaming concrete. Bet. 1 zhel.-bet. 8 no.2:79-81 F '62.
(MIRA 16:5)

(Concrete)

22
11.0

BUDNIKOV, P.P.; EPSHLER, E. Ya.

Processes involved in the solidification of portland cement
when concretes are undergoing hydrothermal treatment under
atmospheric pressure. Dokl. AN SSSR 155 no. 4:916-919 April 1964.
(MIRA 17:5)

1. Chief-korrespondent AN SSSR (for Budnikov).

1/1 ERSHLER, G. V.

Mechanism of Formation of Bright Zinc Deposits on the Cathode. N. T. Kudryavtsev and G. V. Eshler (Izvestiya Akad. Nauk S.S.S.R., 1980, 78, (8), 383-384; *Chem. Abstr.*, 1980, 94, 7878).—[In Russian]. Bright Zn electrodeposits of any desired thickness are produced from acid $ZnSO_4 + Al(NH_4)_2$ baths in the presence of 2:6- or 2:7-naphthalenedisulphonic acid at room temp. and at high c.d. (3-10 amp/dm²), with the bath agitated by compressed air. These deposits are oriented along the hexagonal axis, in contrast to the random dull deposits produced in the same bath without the organic addn. At a higher temp., a higher c.d. is necessary to give the bright deposit. The effect of the brightness is due to adsorption on growing crystal faces.

KUDLO, B.P.; ~~DOUBTNET, T.A.~~

Applicability of the dynamic method of calculating the elements
of ocean currents in the Barents Sea. Trudy GOIN no.96:100-111
'65. (MIRA 18:9)

KOROTNYAN, V. S.; ERSHON, R. A.

Efficient network systems within a collective farm taking
into account the future increase in consumers' needs. Izv.
AN Mold. SSR no.9:17-23 '62. (MIRA 16:1)

(Moldavia—Rural electrification)

BRUCE, L. C.

"The role of the Gravidacanth larvae in the transmission of the malaria parasite." p. 171.

On the role of the Gravidacanth larvae in the transmission of the malaria parasite. 22-23 October 1941. (World War II Medical Research Report No. 1001, London: H.M.S.O., 1942, and Diseases with Natural Food 22-23 October 1941, London: H.M.S.O., 1942, Academy of Medical Sciences 1942 and Academy of Medical Sciences 1942, p. 1-21).

Central Asiatic Anti-plague Inst. /Alma-Ata

ERSHTEYN, A.S.

Effect of a novacaine block on sensitization in experimental conditions. Trudy AMN SSSR 24 no.2:176-183 '53. (MLRA 7:7)

(PROCAINE, effects,

*on exper. serum anaphylaxis)

(ALLERGY, experimental,

*serum anaphylaxis, eff. of procaine nerve block)

ERSIL, Josef, inz.

Manufacture and development of new resistance welding machines.
Zvaranie 13 no. 1:1Q-17 Ja '64.

1. Zavody elektrotepelných zařízení, Horice.

ERSIL, Josef, inz. (Horovice v Podkrkonosi)

Balancing weight for working tools. Energetika Cz 14
no.1:52 Ja'64.

EPSLER, Gabriel

Maxwell's operation with Melenowski's modification in a case of symblepharon with eyeball atrophy. Klin. oczna 35 no.1:115-120 '65.

1. Z Kliniki Chorob Oczu Akademii Medycznej w Warszawie (Kierownik: prof. dr. med. S. Altenberger [deceased]).

ERSLER, V., kand.tekhn.nauk

Using the exhaust gas heat from internal combustion
engines for the operation of semiconductor thermo-
electric generators. Rech.transp. 19 no.7:27-28
Jl '60. (MIRA 13:8)
(Thermoelectricity) (Waste heat)

Handwritten: 1
 Volumetric determination of calcium lactate. M. Mogilevskii and B. Erdler.
Schriften zentral. biochem. Forschungsinst. Nahr. Genussmittelind. (Moscow) 2, 232 (1962). As an improved procedure for routine control in lactic acid manuf., it is recom-
 mended that Ca lactate be titrated with N HCl against methyl violet. The detn. can
 be made in a few min., and is accurate to 0.2-0.3% in lactate concns. of about 10%.
 the method is applicable to solns. not contg. large amts. of salts of other org. acids.
Handwritten: 7
 Julian E. Smith

ASD SEA DETAIL SUPPLEMENTAL LITERATURE CLASSIFICATION

LIST AND ORDER										PROCESSES AND PROPERTIES INDEX									
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15										16 17 18 19 20 21 22 23 24 25 26 27 28 29 30									
<p>CH</p>										<p>Determination of the total volume of the disperse phase gelatin sols. B. V. Ershler. <i>J. Phys. Chem.</i> (U. S. A.) 8, 574-58 (1934).—Results of detms. of the total d. by the method of Polanyi differ greatly owing to adsorption and the Donnan effect. These effects can be avoided by using KIO₄ crystals where the adsorption negligible and the Donnan effect is also small. In 100 of soln. 1 g. of gelatin occupies a vol. of 1.155 ± 4% in M NaCl P. H. Rathmann</p>									
										<p>Zhm-Fiz-Khim. 2</p>									
<p>ASB 35.6 METALLURGICAL LITERATURE</p>										<p>CLASSIFICATION</p>									
<p>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15</p>										<p>16 17 18 19 20 21 22 23 24 25 26 27 28 29 30</p>									

COMMON ELEMENT																									
PROCESS AND PROPERTIES INDEX																									
<p><i>CA</i></p> <p>Application of ultrafiltration for the separation of col- loids and crystalloids. B. Erskine, <i>J. Phys. Chem.</i> (U. S. S. R.) 5, 1308-65(1964); <i>Ch. C. A.</i> 26, 7106. Colloid membranes used for filtering hold back crystal- loids to a very large extent. The retention of crystalloids sharply differs for electrolytes and nonelectrolytes. With nonelectrolytes retention is independent of concn. of the soln. and is general in very small (2-3%). With electrolytes, retention depends greatly on the concn. of the soln. It is large for dil. solns. (50-60% for 0.005 M soln.) and falls sharply with concn. (2-3% for a 1 M soln.). Electrolytes with higher-valence ions having the same charge as the membrane are retained to a greater extent than are lower-valence ions charged oppositely to the membrane. An explanation for the above facts is given. Eino Hanninen</p>																									
<p>ASD-ELA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>82-2</p>																									

CA

3

West. AN 555 R.
See Khim

The platinum electrode. VI. The adsorption of hydrogen and oxygen on platinum at high temperatures H. Kessler, G. Deboin and A. Frumkin. *Russ. and Sov. Chem. Rev.* 1937, 10:15-22 (in English 1973). - Pt annealed in H₂ becomes poisoned and the amt. of easily removable H₂ on its surface is reduced to 40% of the amt. adsorbed on unheated Pt. In addn. a certain amt. of the H becomes very firmly bound. A smooth Pt electrode poisoned with As loses most of its capacity to adsorb H and the oxidation of the electrode begins at a lower cathode potential. The polarization curve begins to change its form when the As adsorption is less than 4×10^{-3} g. As per sq. cm. of Pt surface. When Pt is heated up to 900° for 10 sec. a monolayer of O is adsorbed on its surface. Prolonged heating of Pt results in O adsorption sufficient to form several at. layers and in addn. the O is more firmly bound. Oxidation with air of electrolytically reduced Pt proceeds faster in an alk. medium than in an acid or neutral one. John Livak

ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION

CLASS	SUBCLASS	NUMBER	DATE	REMARKS
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9
10	10	10	10	10
11	11	11	11	11
12	12	12	12	12
13	13	13	13	13
14	14	14	14	14
15	15	15	15	15
16	16	16	16	16
17	17	17	17	17
18	18	18	18	18
19	19	19	19	19
20	20	20	20	20
21	21	21	21	21
22	22	22	22	22
23	23	23	23	23
24	24	24	24	24
25	25	25	25	25
26	26	26	26	26
27	27	27	27	27
28	28	28	28	28
29	29	29	29	29
30	30	30	30	30
31	31	31	31	31
32	32	32	32	32
33	33	33	33	33
34	34	34	34	34
35	35	35	35	35
36	36	36	36	36
37	37	37	37	37
38	38	38	38	38
39	39	39	39	39
40	40	40	40	40
41	41	41	41	41
42	42	42	42	42
43	43	43	43	43
44	44	44	44	44
45	45	45	45	45
46	46	46	46	46
47	47	47	47	47
48	48	48	48	48
49	49	49	49	49
50	50	50	50	50
51	51	51	51	51
52	52	52	52	52
53	53	53	53	53
54	54	54	54	54
55	55	55	55	55
56	56	56	56	56
57	57	57	57	57
58	58	58	58	58
59	59	59	59	59
60	60	60	60	60
61	61	61	61	61
62	62	62	62	62
63	63	63	63	63
64	64	64	64	64
65	65	65	65	65
66	66	66	66	66
67	67	67	67	67
68	68	68	68	68
69	69	69	69	69
70	70	70	70	70
71	71	71	71	71
72	72	72	72	72
73	73	73	73	73
74	74	74	74	74
75	75	75	75	75
76	76	76	76	76
77	77	77	77	77
78	78	78	78	78
79	79	79	79	79
80	80	80	80	80
81	81	81	81	81
82	82	82	82	82
83	83	83	83	83
84	84	84	84	84
85	85	85	85	85
86	86	86	86	86
87	87	87	87	87
88	88	88	88	88
89	89	89	89	89
90	90	90	90	90
91	91	91	91	91
92	92	92	92	92
93	93	93	93	93
94	94	94	94	94
95	95	95	95	95
96	96	96	96	96
97	97	97	97	97
98	98	98	98	98
99	99	99	99	99
100	100	100	100	100

1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
PROCESSING AND PROPERTIES INDEX																																																			
<div style="display: flex; justify-content: space-between;"> M 7 </div> <p>*The Capacity of a Bright Platinum Electrode in Various Electrolytes, and its Dependence on the Treatment of the Electrode. H. Epphus and M. Pruckner (<i>Acta Physicochimica U.R.S.S.</i>, 1937, 6, (2), 193-204).—[In English.] The electrical capacity of a bright platinum electrode depends largely on the purity of the electrolyte and on the previous treatment of the electrode. Heating in hydrogen produces an electrode with a small capacity for hydrogen. The difference between a bright and platinized platinum electrode is very pronounced in the oxygen region.—J. S. G. T.</p>																																																			
ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION																																																			
1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									
1ST AND 2ND ORDERS																										3RD AND 4TH ORDERS																									

Platinum electrode. V. Measurement of the capacity of a smooth platinum electrode when charged with currents of low density. II. FASCHLER (Acta Physicochim. U.R.S.S., 1937, 7, 327-338; cf. A., 1938, I, 200).—A smooth Pt electrode has been constructed and has a depolarization current of 10^{-10} amp. per sq. cm. Charging curves were measured for smooth Pt in the following solutions: $\text{N-KBr} + 0.03\text{N-HCl}$; " N-HCl "; " $\text{N-Na}_2\text{SO}_4 + 0.03\text{N-HCl}$ "; " N-KOH ". These are similar to the curves for the platinized Pt electrode and show the dependence of H $_2$ adsorption on the nature of the electrolyte; the H $_2$ -binding depends on the anion and increases in the order Br^- , Cl^- , SO_4^{--} , OH^- . Slow processes occur on the electrode during charging within the double layer region and the possible significance of such processes is discussed. The no. of H atoms per sq. cm. of surface at the reversible H $_2$ potential approx. = the no. of Pt atoms on the same surface. W. R. A.

W. H. A.

Ca 2

PROCESSING AND PROPERTY INDEX

COMMON ELEMENTS

OPEN MATERIALS INDEX

FROM 1709217V

101000 H1P 01V 401

CELLATION

FROM 101017V

031121 01V 101

ASM-3LA METALLURGICAL LITERATURE CLASSIFICATION

FROM 1709217V

101000 H1P 01V 401

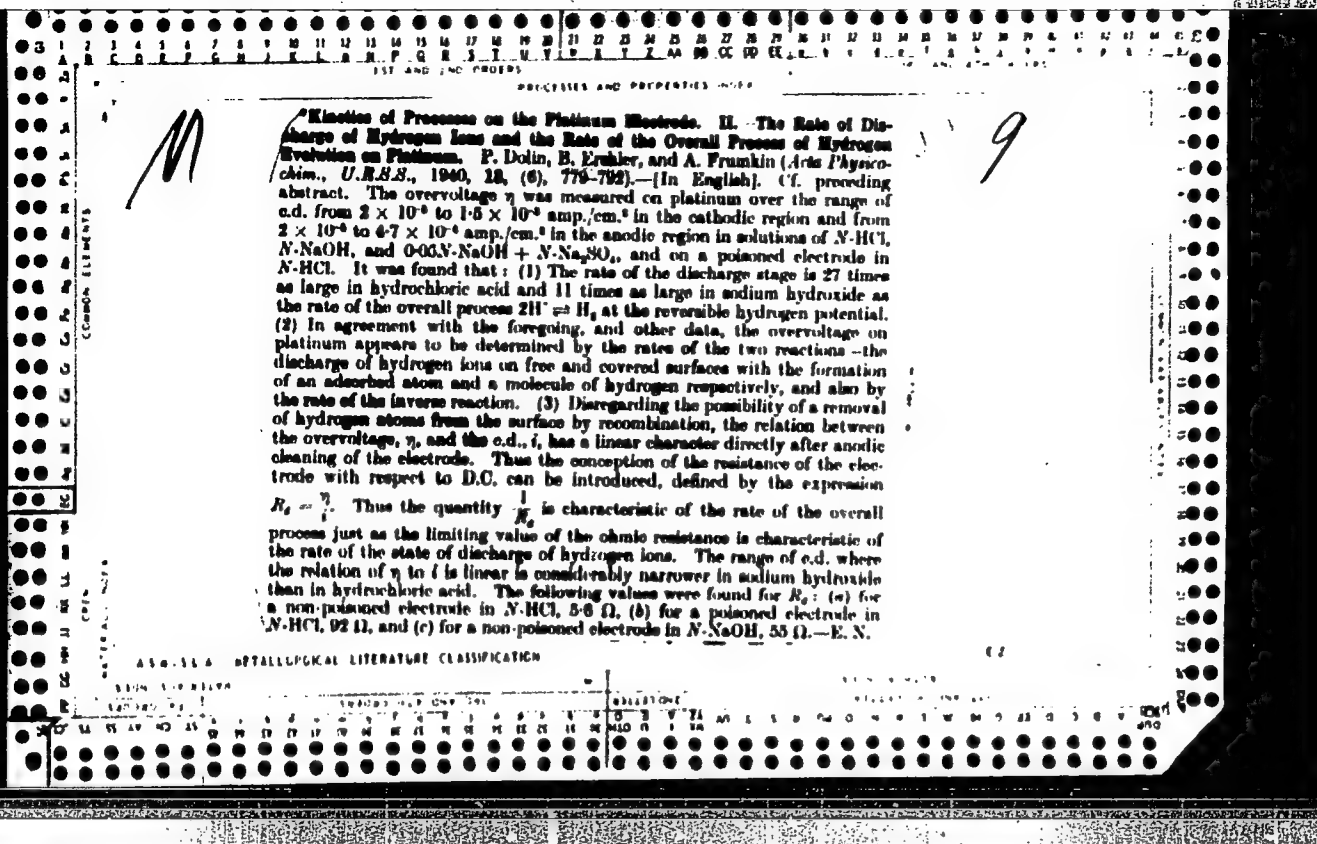
CELLATION

FROM 101017V

031121 01V 101

The polarization capacity of a smooth gold electrode. G. Debern and R. H. Buehler. *Acta Physicochem. U. R. S. S.* 15, 247-250 (1959) (in Russian).—Suppl. data on the potential energy by removal of O₂ bound and the charging curves in H₂SO₄, HCl and KOH solutions of a gold surface heated for 5 min. to 500° are shown. Because of the preliminary oxidation the charging curves are distorted. The O bound on the Au surface can be removed by cathodic polarization at the H₂ potential, more easily Au heated than in acids. Anodic oxidation of a heated Au surface leads to a semi-conductor layer of O atoms. The potential current at 0.45-0.55 m. amp is due to a 0.5-atom layer of H. The capacity given by the curve is 70 μF. per sq. cm. of apparent surface. The potential of the oxidized Au electrode is 0.75 to 0.80 V. V. H. Rathmann

3 Lab Surface Phenomena, Physics-Chem Ensl.
im L Ya. Karpov



1ST AND 2ND SERIES		3RD AND 4TH SERIES	
PROCESSING AND PROPERTIES INDEX			
<p><i>CA</i></p>		<p>Passivity of platinum. I. B. V. Ershler. <i>J. Phys. Chem.</i> (U. S. S. R.) 14, 567-57 (1960). Pt electrode was polarized in 0.5 N HCl by a. c. of 50 cycles per sec., and a cathodic anodizing treatment as to show the potential of the electrode as a function of the electricity supplied to it, beginning with a cathodic or anodic half-period. The curves of potential against coulombs supplied are shifted to higher voltages when the electrode is also anodically polarized by a d. c.; this shift is greater at small charges than at high charges, and the potential V becomes independent of the a. c. when the d. c. is large enough. When the d. c. is small it is used up for soln. of Pt as Pt^{++}; at a higher d. c. Cl is liberated and transforms the Pt into a Cl electrode, which has a high capacity and is less affected by a. c. When the effect of the a. c. is reduced Pt becomes passive. Assuming the capacity of the double layer to be independent of V, the rate of soln. of Pt by the a. c. can be calculated; it appears to be independent of V between 1 and 1.2 v. (against normal H electrode). This is probably due to a blocking of the Pt surface by O at higher V. The thickness of the Pt surface by O at higher V. The thickness of O covering observed was only 0.01 of a monol. layer; therefore the rate of soln. must increase very rapidly with the area of free Pt surface.</p> <p style="text-align: right;">B. C. P. A.</p>	
		<p>2</p>	
<p>Lab. Surface Phenomena, Physics-Chem. Inst. im. Karpov.</p>			
<p>ASR-SEA METALLURGICAL LITERATURE CLASSIFICATION</p>		<p>FROM DONOR</p>	
<p>100000 02</p>		<p>100000 02</p>	

CA

Mechanism of the action of the nickel oxide electrode
 1. H. V. Kishler, G. S. Tyutikov and A. D. Buzina
 J. Phys. Chem. (U. S. S. R.) 14, 965 (1940). It is usu-
 ally assumed that charging of the Ni(OH)_2 electrode in-
 volves liberation of H_2 , and discharging consumes H_2 ,
 from the electrolyte. To check this assumption a Ni
 (OH) electrode was charged in KOH; the decrease of
 KOH concn. corresponded with 1.1-2.0 mols. of H_2 per
 faraday in 4.2 N and 2.3-3.6 mols. of H_2 in 1.5 N. On a
 subsequent discharge an apparent consumption of 1.4-
 2.6 and 2.8-3.8 mols. H_2 , resp., per faraday took place.
 These effects were, however, only apparent since the concn.
 of K_2CO_3 or KCl added to KOH remained almost const.
 during charge and discharge. KOH concn. changes be-
 cause of a sorption or desorption of KOH by Ni(OH)_2 .
 B. C. P. A

DOLE, P.; TECHER, E.; FROST, A.

Moscow

Laboratory of Surface Phenomena, Physico-Chemical Institute: Irina L. Ya. Karpov, (1940-).

"The Effect of the Diffusion of Molecular Hydrogen on the Polarization Capacity of Platinum Electrode" Part III.

Dokl. Akad. Nauk., Vol. 14, No. 7, 1940.

MQ.

Electrochemical Mechanism of Passivation of Platinum. B. V. Ershler
(*U.S.S.R. Acad. Sci., U.R.S.S., 1942, 37, (7) 230-232*). [In
English.] See preceding abstract. It is suggested that the role of adsorbed
oxygen in the passivation of platinum is to decrease the potential drop across
the electrical double layer at the metal surface. This causes a proportionate
decrease in the rate of solution. The electric field of the double layer is
weakened, leading to an increase in the activation energy for the reaction of
electrolyte with platinum. — G. V. R.

1943

CIA-RDP86-00513R000412220

ERSHLER, B. V.

Jun 1946

USSR/Electrodes
Nickel

"The Mechanism of the Action of Nickel Oxide Electrodes," E. M. Kuchinskiy and B. V. Ershler, 8 pp

"Zhur Fiz Khim" Vol XX, No 6

Describes experiments carried out on a particle of Ni(OH)_2 of .2 mm diameter weighing 3.10-5 grams. Diagrams of apparatus and graphs of results. It is stated that the action has practical application in the field of chemical sources of current, electrolytic rectifiers and crystal detectors.

PA 18709

Lab. Superficial Phenomena, Karpov Phys.-Chem. Inst.

ERSHLER, B.

"The Kinetics of Deuterium Ions Discharge and Ionization of Adsorbed
Deuterium Atoms on a Pt-Electrode."

Dok. AN, 21, No 2, 1946.

Investigation of electrode reactions by the method of charging curves and with the aid of alternating currents. H. V. Ershler (Karpov Phys.-Chem. Inst., Moscow). *Discussions Faraday Soc.* No. 1, 200-77 (1947); cf. C.A. 42, 76127. Charging curves obtained at high c.d.s. permit the investigation of the kinetics of electrode reactions. The curves show the dependence of the potential on the amt. of electricity passed. The formation of an adsorbed layer of O on Pt proceeds much more slowly than the formation of an adsorbed layer of H. The adsorption of O is retarded in the presence of Cl ions. The difference in the behavior of Au when charged with low and high c.d.s. is accounted for. In the case of strong adsorption of O on Pt, Ag, and Au a change of adsorption properties of the metal surface is observed, which is preserved after the removal of firmly bound O. The strength of the bond between adsorbed O and metals increases with time and with the temp. of oxidation. A.c. measurements of the capacity and conductance of an electrode in equil. with a soln. at different frequencies permit the investigation of the kinetics of different electrode reactions. By means of such measurements it is shown that the dissolution of Hg as well as the adsorption of Cl ions on its surface proceeds with a high velocity. The reasons for the difference in the rate of adsorption of anions on Hg and Pt are discussed. Data concerning the influence of adsorbed O on the rate of anodic dissolution of Pt are given. M. P. Querry

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

8204 110 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

8204 8204

Study of the kinetics of electrode reactions by means of alternating currents. 1. Theory of the polarization of reversible electrodes by weak alternating currents. B. V. Krasler (Karpov Inst. of Phys. Chem., Moscow). *J. Phys. Chem. (U.S.S.R.)* 22, 683-695 (1948). Polarization by a.c. is a convenient method of studying rapid electrode processes because concn. polarization is reduced by using high frequencies. The relation between polarization and the rate of the electrode process is derived for the exchange of ions between metal (or metal amalgam) and soln.; for oxidation-reduction processes; and for adsorption. J. J. Bikerman

Zhen-Fis. Khim.

1

ASMLA METALLURGICAL LITERATURE CLASSIFICATION

M

*Determination of the Zero Points of Solid Metals from Measurements of the Capacity of the Double Layer. I.—Lead. T. Borisova, B. Kähler, and A. Frumkin (Zhur. Fiz. Khim., 1944, 22, 825-830; C. Abn., 1946, 62, 470).—[In Russian]. The double-layer capacity C of a smooth Pb electrode was measured with an A.C., the amplitude of which was 20 mV., the electrode being cathodically polarized with a D.C., the voltage of which was varied within 1 V. When the e.m.f. of the cell $Hg|Hg_2Cl_2|N-KCl|soln.X|Pb$ was 0.97 V., the C passed through a min. whatever the compn. of the soln. X . The min. value of C was ~18 microfarade/cm.² when X was $N-KCl$, ~12-13 in 0.01 $N-KCl$, 6 in 0.0001 $N-KCl$, 15 in $N-H_2SO_4$, 10 in 0.001 $N-H_2SO_4$, and 6 in 0.0001 $N-H_2SO_4$. When the frequency of the A.C. increases (up to 500 c./s.), the min. C decreases by a few %. When the e.m.f. is lowered from 0.97 V., C increases more steeply than when the e.m.f. is raised. In contrast to Hg, there is no range of potential independent C at high cathodic polarizations; this shows that the double layer on Pb is different from that on Hg. The potential of the min. C is that of the zero charge. It differs from the potential of the electrocapillary max. of Hg by 0.46 V. This difference is almost equal to the contact potential Hg/Pb and to the difference between the electrocapillary max. of Hg and liq. Pb.

ERSHLER, E.

Discussion

Pleskov, V. and Ershler, E., On the question concerning the calculation of separate electrode potentials from spectroscopic and thermodynamic data.

The Karpov
Physico-Chemical Institute
Moscow
April 29, 1948

SO: Journal of Physical Chemistry (USSR) 23, No. 1 (1949)

Determination of the zero voltage points of solid metals from measurements of the capacity of the double layer. II. Thallium, cadmium, lead. T. I. Borisova and B. V. Ershler (Karpov Inst. Phys. Chem., Moscow). *Zhur. Fiz. Khim.* 24, 337-44 (1950); cf. C.A. 43, 1704. The curves "electrode capacity C against applied voltage φ " have min. at -0.46 v. for Pb in 0.01 N KCl, -0.60 for Tl in 0.001 0.1 N KCl, and -0.70 for Cd in 0.005 N KCl, all potentials being referred to the max. of the electrocapillary curve of Hg. In agreement with Frumkin's theory (C.A. 40, 2055) these potentials are almost identical with the contact potentials Pb-Hg, Tl-Hg, and Cd-Hg, resp. The shapes of the $C-\varphi$ curves were different for plate and for droplike solid electrodes (an app. for making such electrodes is described). In the latter instance the curves were similar to those for Hg drops, and the min. C was about 25 for Pb and about 15 microfarad-sq. cm for Cd. Similar curves were obtained for plate Cd electrodes heated in H. On the contrary, freshly scraped electrode plates gave C which showed no region of const. values greatly depended on the KCl concn. (e.g., min. C for Cd was 33 in N KCl and 24 in 0.005 N KCl), and decreased when the frequency of the charging current increased (e.g., min. C for Tl in N KCl was 19 at 200 cycles/sec. and 20 at 2000 cycles/sec.). The difference between the two types of the $C-\varphi$ curves is due to non uniform distribution of current over the rough plate electrodes.

J. J. Bikerman

ERSHLER, B. V.

PA 190T10

USSR/Chemistry - Development of Oxygen at Platinum Electrodes May 51

"Adsorption of Oxygen on Platinum at Polarizations Determined According to Charging Curves," Ts. I. Zelkind, B. V. Ershler, Phys Chem Inst Imeni L. Ye. Karpov

"Zhur Fiz Khim" Vol XXV, No 5, pp 565-576

Curves of charging Pt with direct current in acidified or alkalinized H_2SO_4 solns were taken during periods from hundredths of a sec to several sec. Effect of the potential on the rate of discharge of H^+ ions was shown experimentally; results agreeing

LC

190T10

USSR/Chemistry - Development of Oxygen at Platinum Electrodes (Contd) May 51

with prior ac expts. The 1st, slow stage in formation of surface Pt oxides is discharge of O^- . Due to changes during the 1st stage of existence of the oxide, it exhibits properties resembling those of a phase oxide. Inhibition of discharge of oxygen by the oxide is reduced as the oxide ages. Electrochem adsorption of oxygen on platinum is facilitated by presence of adsorbed hydrogen.

LC

190T10

Nuclear Sci. Abstracts

Vol. 8, No. 4

28 Feb 54

ERSHLER, B.V.

The problem of absolute potential in electrochemistry and the zero points of the metals. Uspekhi Khim. 21, 237-49 '52.
(CA 48 no.2:471 '54) (MLRA 5:2)

(CA 48 no. 2:471 '54)

• Application of Polarization by Alternating Current to the Investigation of the Mechanism of Metal Ion. B. V. Ershler and K. J. Korotkiy (Trudy Sverdlovskogo gos. universiteta, 1970, 1983, 446-450).—(In Russian). The active resistance of an electrode of Zn amalgam in a soln. of a Zn salt in a supporting electrolyte, as measured by an A.C. bridge, consists of a term inversely proportional to the square root of the frequency (ω) and another term (R_{exch}) independent of ω ; these terms are connected with concentration and chem. polarization, resp. From measurements of R_{exch} , the exchange current was calculated and was found to be proportional to the concentration of Zn^{2+} ions and to vary exponentially with the electrode potential, indicating that the slowest part of the exchange is the discharge of Zn^{2+} ions, which takes place with simultaneous transfer of two electrons. The rate of exchange also depends on the nature of the anion, whose accelerating action increases in the order $\text{SO}_4^{2-} < \text{Cl}^- < \text{NO}_3^- < \text{O}^-$. V. E. T.

EL ①

SKH

ERSHLER, B. V.

116 Electrochemical Properties of Cadmium in Alkaline Solutions. B. A. Rozentsweig, H. V. Knyaz, E. L. Shtrum, and N. N. Ostapova. Trudy Sovetskoye Khimicheskoye, 1950, 1953, 571-573. (In Russian). The solubility of Cd oxides in alkalis increases with an increase in alkali concentration. In both the anodic oxidation of Cd to Cd(OH)₂ and the cathodic reduction of the hydroxide to the metal, a Cd-contg. anion is formed as an intermediate. The change in the capacity of the double layer and the resistance of the Cd electrode during anodic polarization were measured. The rates of change increased with decreasing alkali concentration and increasing anodic o.d. An oxide coating several layers thick is formed on the Cd. The anodic efficiency decreases on dilution of the alkali, and is inversely proportional to (o.d.)², but the efficiency of the cathode process is almost independent of both concentration and o.d. Only a small part of the vol. of the anodic oxide layer on the Cd participates in the formation of the passive layer. —G. V. E. T.

PM 1/28/54

(3)

ERSHLER, B. V.

USSR/ Chemistry - Physical Chemistry

Card 1/1

Author : Ershler, B. V.

Title : Discussion on the "absolute" scale of potentials (Discussion)

Periodical : Zhur. Fiz. Khim., 28, Ed. 5, 957 - 960, May 1954

Abstract : The report by E. A. Kanevskiy, published in the Journal of Physical Chemistry No. 27, 1953, and dealing in the subject of absolute scale of electrode potentials is discussed and certain inconsistencies are pointed out. Most criticism pertains to the method of calculating the values called by Kanevskiy the absolute potentials. Thirteen USSR references.

Institution : ...

Submitted : July 18, 1953

ERSHLER, B. V.

4050 AEC-tr-2435((Pt. 1) (p.251-4))
RESULTS OF THE INFLUENCE OF IRRADIATION ON THE
DIFFUSION OF SILVER IN LITHIUM. V. K. Zavoleky
(Zavolaki) and B. V. Ershler. p.251-4 of CONFERENCE OF
THE ACADEMY OF SCIENCES OF THE USSR ON THE
PEACEFUL USES OF ATOMIC ENERGY, JULY 1-5, 1955.
SESSION OF THE DIVISION OF PHYSICAL AND MATHE-
MATICAL SCIENCES (Translation). 4p.

This paper was originally abstracted from the Russian
and appeared in Nuclear Science Abstracts 30 NSA 9-7797.

6
1RM

RMV 104

SHARAF, M. I., KERNADAN, A. M., EL M. L. L., and AMIN, M. I.

"Determination of the Absorption Cross-section and of the Radiation
Capture Cross-Section of Uranium - 233 for Fast Neutrons," a paper
presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

Enshler, B.V.

ALIKHANOV, A.I.; ZAVOYSKIY, V.K.; SERDYUK, R.L.; ~~ENSHLER~~, B.V.; SUVOROV, L.Ya.

[Boiling homogeneous nuclear power reactor] Kipiashchii energeti-
cheskii gomogennyi iadernyi kotel; doklady, predstavlennye SSSR
na Mezhdunarodnoi konferentsii po mirnomu ispol'zovaniyu atomnoi
energii. Moskva, 1955. 13 p. [Microfilm] (MIRA 9:3)
(Nuclear reactors)

*Also presented at Atomic-for-Peace Conf (UN),
Geneva, Switzerland, 1955*

BRISHLER, B. A., JOLIN, F. I.

"Radiolysis of water in the Presence of H_2 and O_2 due to Acceptor Radiation,
Fission Fragments and λ -radiation," a paper presented at the Atoms for Peace
Conference, Geneva, Switzerland, 1955

EXHIBIT, B.V.

607-RML

Yields of neodymium and cerium isotopes from the fusion of uranium-235. G. M. Kikvidze, M. P. Anikina, I. P. Golits, and B. V. Rylov. *Soviet Phys. Nucl. Phys.* 1955, 10, 1000. (English summary).—The fusion yields of various isotopes of Ce and Nd were detd. mass spectroscopically by the isotope dilution method. The yields are as follows: Ce^{140} , $5.8 \pm 0.17\%$; Ce^{142} , $5.8 \pm 0.17\%$; Nd^{144} , $5.15 \pm 0.3\%$; Nd^{146} , $3.37 \pm 0.3\%$; Nd^{148} , $3.00 \pm 0.2\%$; Nd^{150} , $2.24 \pm 0.16\%$; Nd^{152} , $1.15 \pm 0.10\%$; and Nd^{154} , $0.51 \pm 0.04\%$. The yield ratios of the Nd isotopes are detd. with an accuracy of ± 0.05 units that of the Ce isotopes with an accuracy of 1%. The U^{235} fusion yields curve in this heavy mass region (140-155) is similar to that for U^{238} , but displaced by one mass unit in the direction of the light masses. J. R. Leach

(3)

RML, 222

6155444 B, 001

The influence of irradiation (with neutrons) upon the diffusion of silver in lithium. V. K. Zayotskii and B. V. Ershler. *Seriya Akad. Nauk. S.S.S.R. po Mirovomu Vostoku*. *Mal. Nauk* 1955, 362-8. — The diffusion of Ag from an Ag foil of 12 μ was observed through Li of 0.5-mm. thickness, at 16, 100, and 150°, over a period of 34.2 hrs., at simultaneous irradiation with slow neutrons. There are changes observed in the rate of diffusion, because Li "disappears", i.e. two reactions take place: $Li + n \rightarrow He + H$; $Li + n \rightarrow Li + 2 He + \beta$. Thus, the diffusion coeff. $D \times 10^4$ was 0.10 at 16° and 0.34 sq. cm./sec. at 100°, which agrees nicely with the values calculated from the formula by Langmuir-Lashman (0.00 and 0.31, resp.). W. J.

RMP *[initials]*

SUBJECT USSR / PHYSICS
 AUTHOR LAPTEV, F.S., ERSLER, B.V.
 TITLE The Atomization of Metals by Fission Fragments.
 PERIODICAL Atomnaja Energija, 1, fasc. 4, 63-66 (1956)
 Issued: 19.10.1956

CARD 1 / 2

PA - 1515

By measuring the number of atoms evaporated on the occasion of the emission of a fission fragment from a metal surface by the same surface valuable data concerning the heated zone along the traces of the fission fragments are obtained.

The present work determines these numbers for U^{233} and Pu^{239} .

Experimental part: In an aluminium can a 2 x 3 mm plate of the metal under investigation, and above it a metal screen was mounted. The aluminium can was enclosed in a quartz ampule with a vacuum of about 10^{-4} mm Torr. When it was irradiated with neutrons, part of the fission fragments formed in the plate left the metal and on this occasion they atomized a certain part of the metal.

The evaporated U^{233} or Pu^{239} -atoms were partly deposited on the screen and their number could be determined by measuring the α -activity of the screen. From the number of fragments emitted from the metal surface in the course of irradiation and from the total number of evaporated atoms the number of atoms evaporated by one fragment was determined. Tests were carried out with metals with oxidized and non-oxidized surfaces. The average number of atoms carried away by one

U^{233} fragment is 24 in the case of oxidized surfaces, but in the case on non-oxidized surfaces it is 1200. In the case of Pu^{239} with a purified surface an

Atomnaja Energija, 1, fasc. 4, 63-66 (1956) CARD 2 / 2

PA - 1515

average of 3500 atoms is carried away by one fragment. The evaporation observed on the occasion of these tests is apparently not due to the macroscopic heating of the entire metal sample resulting from fission reactions. Furthermore, the evaporation of plutonium caused by the emission of α -particles from a plutonium plate was investigated. The number of atoms knocked out per α -particle was computed from the α -activity of the screen and from the computed quantity of α -particles emitted from the metal surface during the test. It amounts to 0.02.

Discussion of results: The data found on this occasion, which are of a certain interest, are suited for the estimation of some parameters of the heated zones in the metals, particularly of the diameter of that zone in which the temperature, after emission of the fragment, is increased up to a value that warrants evaporation. For the number of uranium atoms in the heated zone (its length amounts to $14,6 \cdot 10^{-4}$ cm) the value $5,6 \cdot 10^6$ is found. The difference in results found on the occasion of the evaporation of uranium and of plutonium is apparently due to the low degree of thermal evaporation of Pu and to its low melting temperature. Also other metals should be examined.

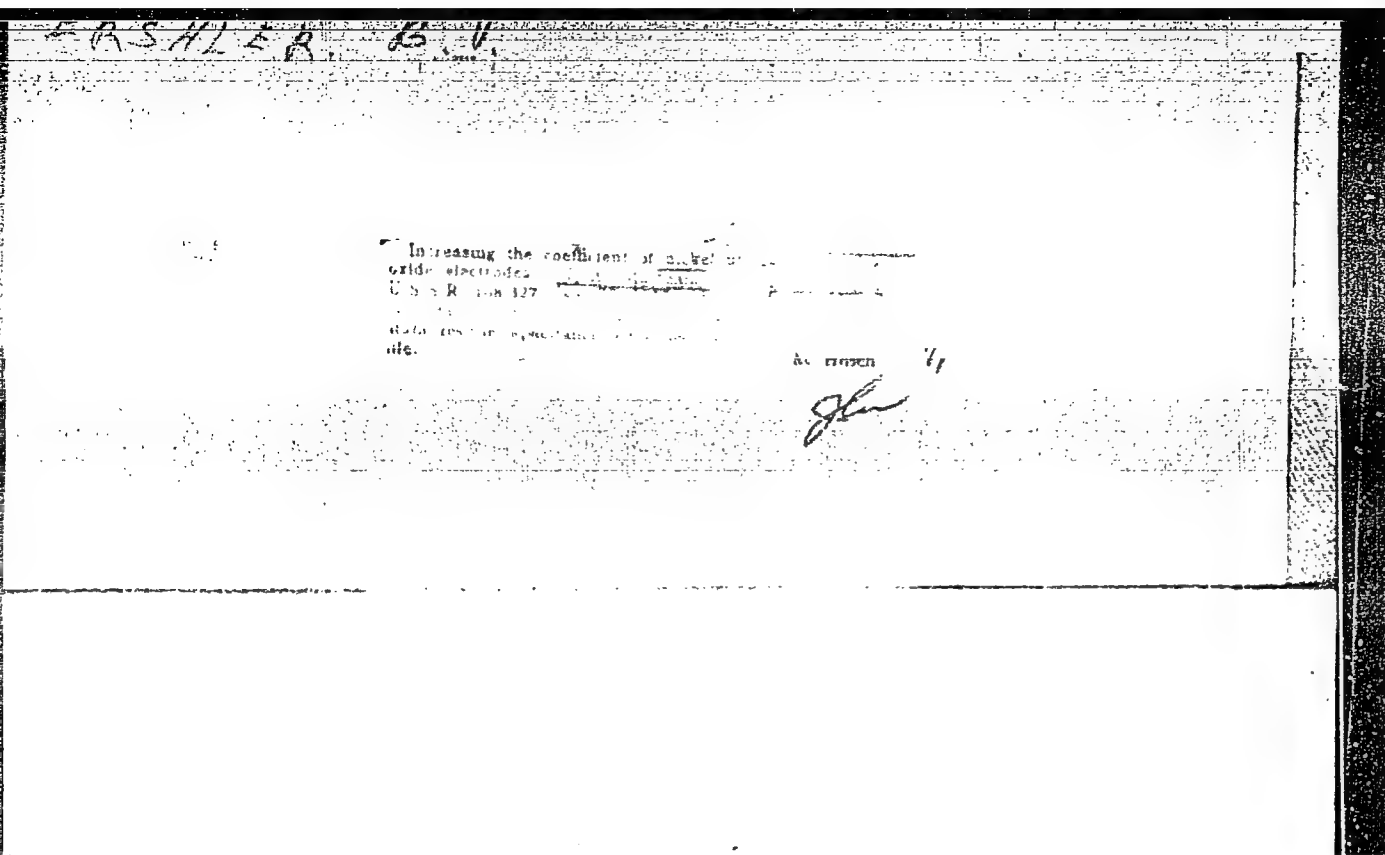
INSTITUTION:

~~AKSHANOV, A.I.~~
ALIKHANOV, A.I., ERSHLER, B.V., LYUBIMOV, V.A., YELINEYEV, G.P.,

(Acad. Sci. USSR)

"Measurement of Longitudinal Polarization of γ Electrons."

paper submitted at the A-U Conf. on Nuclear Reactions in Medium and Low
Energy Physics, Moscow, 19-27 Nov 57.



ERSHLER, B.V.

PA - 2050

AUTHOR: MJASIŠČEVA, G.G., ANIKINA, M.P., GOL'DIN, L.L., ERSHLER, B.V.
TITLE: Measuring of the Cross Section of Th^{232} for Thermal Neutrons and of the Resonance Integral of the Absorption on Neutrons (Russian)
PERIODICAL: Atomnaja Energija, 1957, Vol 2, Nr 1, pp 22-26 (U.S.S.R.)
Received: 3 / 1957 Reviewed: 3 / 1957
ABSTRACT: These measurements were carried out on a reactor with heavy water. In the reactor considerably diluted solutions of the nitrates of the substances investigated were irradiated. While the cross sections were being measured, the solutions arranged side by side which contained thorium and the gauging material were simultaneously irradiated. Also measuring of cadmium relations is discussed in short. The β -activity was measured by means of a counter with a mica window. The values measured for activity were extrapolated for the point of time at which irradiation ended.
Results: The cadmium relations measured for thorium, gold, uranium, and indium in various channels of the reactor are shown together in a table. The cross sections of thorium were compared with the cross sections of gold, indium, and uranium. The relations obtained immediately from the experiment have no simply physical significance, but it is

Card 1/3

PA - 2050

Measuring of the Cross Section of Th^{232} for Thermal Neutrons and of the Resonance Integral of the Absorption on Neutrons (Russian)

possible, from them, to determine the cross section of thorium for thermal neutrons as well as the amount of the resonance integral of absorption. Next, the notion of the average cross section is introduced, which depends on the spectrum of the neutrons and also on the gauging material. The average cross sections of thorium are given in a table. From the data hitherto discussed it is then possible to compute the cross section of thorium for thermal neutrons; the values found are shown in form of a table. The cross sections found with gold agree excellently with one another. The cross sections measured with indium are noticeably smaller than those measured with gold. Whereas the cross sections of thorium, which were measured with uranium as a gauging material, differ most among one another, measurements on the occasion of which gold was used for gauging gave the best results. The resonance integral of the absorption for thorium was computed according to the

Card 2/3

PA - 2050

Measuring of the Cross Section of Th^{232} for Thermal
Neutrons and of the Resonance Integral of the Absorption
on Neutrons (Russian)

formula $RI(\text{Th}) = RI(\text{Au}) (\sigma_{\text{therm.Th}} / \sigma_{\text{therm.Au}}) ((R_{\text{Au}} - 1) / (R_{\text{Th}} - 1))$

For the resonance integral of thorium the following values
were found: in the lattice: (88 ± 5) barn, in the cavity
 (63 ± 2) barn, in the reflector (59 ± 6) barn. These diffe-
rences may be explained by the different shape of the
spectrum of the resonance neutrons.

ASSOCIATION: Not given
PRESENTED BY:
SUBMITTED:
AVAILABLE: Library of Congress

Card 3/3

ER sh 102, B v

AUTHOR: ANIKINA, M.P., ERSHLER, B.V. PA - 2310
 TITLE: The Yield of Sr^{90} on the Occasion of the Fission of U^{233} .
 (Vykhod Sr^{90} pri delenii U^{233} , Russian).
 PERIODICAL: Atomnaya Energiya, 1957, Vol 2, Nr 3, pp 275 - 276 (U.S.S.R.)
 Received: 4 / 1957 Reviewed: 5 / 1957
 ABSTRACT: The yields of fragments on the occasion of the fission of U^{233} are not yet explored with sufficient thoroughness, and in particular no data are available in published works concerning the yield of Sr^{90} . From the accumulation of Sr^{90} it is easily possible to estimate the number of fissions occurring in a U^{233} sample on the occasion of a long irradiation of this sample (i.e. under such conditions in which it is difficult to utilize relatively short-lived fragments as e.g. Ba^{140} (12 days) or Sr^{89} (53 days)).
 For the determination of the yield of Sr^{90} a long irradiated U^{233} sample was used, which has already been described in one of the author's previous works. With a weight of the uranium sample of 60.75 mg, 11.9 mg were fissioned therein. The activity of the Sr^{90} in these samples determined after a three year's exposure of the sample, and that of the Y^{90} (which the authors separated from the individual portions of the Sr^{90}) was determined after an exposure of from 20 - 30 days (i.e. after the equilibrium Sr^{90} (19.9 years) $\rightarrow Y^{90}$ (65 hours) had been attained). Also in these

Card 1/2

The Yield of Sr^{90} on the Occasion of the Fission of U^{235} ^{PA-2310}.
 samples the yield of Sr^{90} was determined.

In the course of recent experiments the number of fissions occurring in the samples was determined from the quantity of Sr^{89} (the yield of which, according to published data, was assumed to be 5,6%). Measuring results are shown together in a table. Comparison between the yields of Sr^{90} in the case of long and short irradiation shows that Sr^{90} and its predecessors have no great absorption cross sections for neutrons in the decay series for $\lambda = 90$.

Among the here mentioned values for the yield of Sr^{90} the value $(4,56 \pm 0,08)\%$ is the most reliable. It was obtained as the result of experiments with long irradiation of an uranium sample (1 table).

ASSOCIATION: Not given.

PRESENTED BY:

SUBMITTED: 5.9.1956.

AVAILABLE: Library of Congress.

Card 2/2

ERSHLER, B. V.

AUTHORS: Ivanov, R. N., Gorshkov, V. K., Anikina, M. P., 89-12-11/29
Kukavadze, G. M., Ershler, B. V.

TITLE: Fission Yields of Several Heavy Fission Products of U^{233}
(Vykhody nekotorykh tyazhelykh oskolkov pri delenii U^{233})

PERIODICAL: Atomnaya Energiya, 1957, Vol. 3, Nr 12, pp. 546-547 (USSR)

ABSTRACT: The absolute fission yields were determined by means of the
isotope dilution method (1) and of the mass spectrographically
obtained integral concentrations (2). The sample of U^{233} was
irradiated for two months in a reactor.
The following yields in % were measured:

Card 1/3

Fission Yields of Several Heavy Fission Products of U^{233} 89-12-11/29

The Xe^{135} absorption coefficient was obtained at
($3,2 \pm 1,0$). 10^6 b.
(There are 1 table, 1 figure and 8 references, 5 of which
are Slavic).

SUBMITTED: May 20, 1957

AVAILABLE: Library of Congress

Card 3/3

ERSHLER, B.V.
PIROGOVA, N.I.; ERSHLER, B.V.

Preparation of anhydrous lithium iodide. Zhur.prikl.khim.
29 no.7:1128-1129 J1 '57. (MIRA 10:10)
(Lithium iodide)

AUTHOR **ALIKHANOV, A.I., YELLISEYEV, G.P., LYUBIMOV, V.A.** **56-6-12/56**
ERSHLEIN, B.V. ~~56-6-12/56~~

TITLE **The Polarization of Electrons on the Occasion of β -Decay.**
(Polyarizatsiya elektronov pri β -raspade- Russian)

PERIODICAL **Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 6, pp 1344-1349**
(U.S.S. R.)

ABSTRACT In connection with the checking of the law of conservation of parity, the authors carried out experiments concerning the discovery of a longitudinal polarization of electrons on the occasion of β -decay. For the determination of this polarization the effect of the azimuthal asymmetry was used; it occurs on the occasion of the simple scattering of electrons polarized vertical to the direction of motions through a large angle on a thin foil of a heavy element. The longitudinally polarized β -electrons were sent through an electric field crossed by a magnetic field. In these crossed fields a transversal polarization occurred in the electrons. The reasons why this method should be favored are given. The numerical parameters of the measuring device used here are given. Measurements were carried out in the energy domains of 300 keV. At an electric field strength of 18,3 keV/cm and a magnetic field strength of $H = 79$ Oe the spins were turned by the angle of $\varphi \sim 50^\circ$. The expected amount of the azimuthal asymmetry can be determined from the data given in a table. For the expected effect of azimuthal asymmetry in the plane which is vertical to the direction of spin the value $\delta_{\text{exp}} = 27,7\%$ is found.

Card 1/2

ERSHLER, E. V.
MURIN, A. N., ERSHLER, E. V., KUKAWADZE, G. M., ANIKHINA, M. P., GORSHKOV,
V. K., IVANOV, R. N., KRIZANSKIY, L. M. and REFORMATSKIY, I. A,

"Mass-Spectrometric Study of U^{233} , U^{235} and Pu^{239} Fission Products."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic
Energy, Geneva, 1 - 13 Sep 58.

FIRSOV, V. G., ERSHLER, B. V.

"Radiation Processes in Solutions of Tetravalent Uranium" p.60

Trudy Transactions of the First Conference on Radioaction Chemistry, Moscow,
Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

Ershler, B. V.
 AUTHORS: Anikina, M. P., Ivanov, R. N.,
 Mukavadze, G. M., Ershler, B. V., 89-2-22/35

TITLE: The Half-Life of Sr^{90} and its Fission Yield from U^{233} (Period
 poluraspada Sr^{90} i vykhod ego pri delenii U^{233}).

PERIODICAL: Atomnaya Energiya, 1958, Nr 2, pp. 198-193 (USSR)

ABSTRACT: According to the usual method the half-life of Sr^{90} was
 determined to be $29,3 \pm 1,6$ a.
 The yields of Sr^{90} and Sr^{88} in the $\text{U}^{233}(\text{n},\text{f})$ reaction were de-
 termined to be $5,3 \pm 0,3$ % for Sr^{88} and
 $5,8 \pm 0,4$ % for Sr^{90} .
 The yield for Sr^{90} given in reference 7 must be calculated
 now, as the half-life period of 19,9 a was still used there.
 When the newly determined half-life period is used, the yield
 in this case amounts to $6,3 \pm 0,3$ %. There are 1 table and 7
 references, 4 of which are Slavic.

SUBMITTED: September 18, 1957

AVAILABLE: Library of Congress

Card 1/1 1. Half life-Measurement 2. Strontium 90-Half life-Measurement

AUTHORS: Firsov, V.G., Ershler, B.V.

89-4-4-2/28

TITLE: The Radiation Oxidation of the Solutions of Quadrivalent Uranium
(Radiatsionnoye okisleniye rastvorov chetyrehvalentnogo urana)

PERIODICAL: Atomnaya Energiya, 1958, Vol. 4, Nr 4, pp. 344-348 (USSR)

ABSTRACT:

If a nitric acid solution of quadrivalent uranium is irradiated with the γ -rays of Co^{60} in the case of the absence of O_2 , the oxidation yield of U^{+4} is nearly 5.0. The solution is a $0.8\text{NH}_2\text{SO}_4$ -solution, the U^{+4} concentration amounting to about ~ 100 mg equivalent/l.

The oxidation reaction of U^{+4} by H_2^+ -ions was not observed, not even if the acid content of the solution is considerably increased or if the U^{+4} concentration is reduced. The yield becomes smaller with a reduction of U^{+4} concentration, mainly as a consequence of the recombination process of the radicals H and OH. From the experimental data it was possible to derive the functional connection between G (oxidation yield) and U^{+4} . For the three reactions $\text{H} + \text{OH}$, $\text{H} + \text{H}$ and $\text{U}^{+4} + \text{OH}$ also the velocity constants

Card 1/2

The Radiation Oxidation of the Solutions of
Quadrivalent Uranium

89-4-4 2/28

were determined. With an increase of U^{+4} concentrations to more than 110 mg-equivalent/l, G was observed to decrease. This might be explained by a reaction of U^{+4} with the radical H. Various mechanisms are investigated, by means of which the uranyl ions might slow down U^{+4} -oxidation. Proceeding from this point of view the ratio of the reaction velocities of $UO_2^{+2} + H$ and $H + H$ as well as the ratios $UO_2^{+2} + OH$, $H + OH$ and $H + H$ were computed. There are 4 figures, 3 tables, and 9 references, 1 of which is Soviet.

SUBMITTED: May 20, 1957

1. Uranium solutions--Oxidation 2. Uranium solutions--Effects of radiation 3. Nitric acid--Chemical reactions 4. Gamma rays--Chemical effects 5. Cobalt isotopes (Radioactive)--Performance

Card 2/2

62-58-5-18/27

AUTHORS: Ershler, B. V., Firsov, V. G.

TITLE: On the Radiochemical Oxidation of Bivalent Iron in Aqueous Solutions (O radiatsionno-khimicheskoye okisleniye dvukhvalentnogo zheleza v vodnykh rastvorakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Khimicheskikh Nauk, 1958, Nr 5, pp. 633 - 634 (USSR)

ABSTRACT: The unexpected acceleration of the oxidation of bivalent iron under the action of γ -radiation (in the presence of dissolved oxygen) was described in previous reports. This process took place with an intensified concentration of Fe^{2+} and of the H_2SO_4 , HCl , H_3PO_4 -acid. The present report gives more accurate data with respect to the dependence of the velocity of oxidation with bivalent iron in the presence of dissolved oxygen on the duration of effectiveness of the solution in contact with oxygen and the intensity of radiation. It was found that with small doses (≤ 15 p:sec) the effect in the solutions remains generally small. The yield of the oxidation of the bivalent iron dissolved in water in dependence of

Card 1/2

. On the Radiochemical Oxidation of Bivalent Iron
in Aqueous Solutions

62-58-5-18/27

various factors was further investigated. There are 1 figure
and 13 references, 6 of which are Soviet.

SUBMITTED: December 20, 1957

1. Iron--Oxidation 2. Iron--Effects of radiation 3. Gamma rays
--Applications 4. Oxygen--Applications

Card 2/2

ERSHLER, B.V.
ALIKHANOV, A.I., YELISEYEV, G.P., LYUBIMOV, V.A. and ERSHLER, B.V.

"Polarization of Electrons Emitted in β -Decay,"
Nuclear Physics, Vol. 5, No. 4, 1958. (No. Holland Publ. Co., Amsterdam)

USSR Acad. Sci., Moscow

Abst: In connection with a reconsideration of the law of conservation of parity some experiments have been performed with the purpose of detecting longitudinal polarization of electrons emitted in β -decay. It was found that the spin of the emerging β -electrons is opposite to the direction of electron motion. The magnitude of the longitudinal polarization agrees with the theoretical value, v/c , v being electron velocity.

AUTHORS: Alikhanov, A.I., Yeliseyev, G.P., 56-54-4-1/60
Lyubimov, V.A., Ershler, B.V.

TITLE: Electron Polarization in β -Decay (Polyarizatsiya elektronov pri β -raspade)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol. 34, Nr 4, pp. 785 - 799 (USSR)

ABSTRACT: The authors reported already in a short communication (reference 1) on experiments in which a longitudinal polarization of the β -electrons was found. This work now describes more exactly these experiments and control measurements. The experimental arrangement consisted of a device for measuring the turning of the spin and of a device for the measurement of the intensity of the electrons, which were scattered through a wide angle, at various azimuthal angles between 0 and 360°. The apparatus for the turning of the spin consisted of an oblong electric capacitor which was in a metal vacuum tube. Then the authors shortly report on the accuracy of the measurement of the electric and of the magnetic

Card 1/4

Electron Polarization in β -Decay

56-34-4-1/60

field. The source of the β -electrons was laid upon a 10 μ thick aluminium support as an even spot with a diameter of 1 cm. The source consisted of segregations from fraction solutions (oskolochnyy rastvor) of Sr^{90} with an admixture of Sr^{89} . The spectrum of the electron energies of such a source is plotted in a diagram. The thickness of the source plays an essential role in such measurements. That part of the device in which there were the scatterer of the electrons and the counters was separated from the capacitor by a thin colloidal film. For the computation of the expected effect of the azimuthal asymmetry the angle of rotation of the electron spin in crossed fields and the dependence of the azimuthal asymmetry on the scattering angle and on the energy of the polarized electrons must be known. A quite complicated term for $\sin \varphi$ is obtained, where φ means the angle of rotation of the spin. The amount of $\sin \varphi$ depends to quite a degree on the energy of the electron and this especially in the case of high energies. 3 tables illustrate the experimental results for 3 series of measurements at energies of ~ 300 keV and a fourth table

Card 2/4

Electron Polarization in β -Decay

56-54-4-1/60

gives the results for energies of ~ 750 ke V. Various details are discussed. An asymmetry in the direction $0 - 180^\circ$ exists that changes its sign in the case of a change of the signs of the fields. Their mean value is $(14,5 \pm 8,5)\%$. In the direction $90 - 270^\circ$ the asymmetry is $(42,8 \pm 4,8)\%$. The data obtained on the polarization need a correction because of the multiple scattering at the scattering foils. The degree of polarization has at a mean energy of 300 keV resp. 750 keV with an accuracy of 15% resp. 40% the value $-v/c$. Finally the authors thank K.A. Ter-Martirosyan for the derivation of the formula of the spin rotation in the crossed fields; L. Ya. Suvorov, M. P. Anikina, and V. D. Laptev for the production of the strontium source; A. S. Kronrod for the computation of the light intensity of the device and M. Ye. Vishnevskiy for his useful data on the role of multiple scattering. There are 4 figures, 7 tables, and 12 references, 6 of which are Soviet.

Card 3/4

56-34-4-1/60

Electron Polarization in β -Decay

ASSOCIATION: Akademiya nauk SSSR (AS USSR)

SUBMITTED: February 3, 1958

1. Electrons---Polarization
2. Beta particles---Decay

Card 4/4

ERSHLER, B. V.

1961 - 1962
1963/64

(c)

International Conference on the Role of the Scientist in Society (Report of Soviet Scientists) (Moscow: Nauka Press, 1979). 52 p.

8,000 copies printed.

Eds. (please page): A.I. Allinson, *Mathematical Economics*; A. Veary, *Candidates of Physical and Mathematical Sciences*; W. Y. Bazel', *Math. Y. Bazel'.*

[illegible]

PURPOSE: This collection of articles is intended to introduce you to progress in nuclear physics. The volume contains 4 papers and other persons interested in nuclear physics at the Second Conference on Peaceful Uses of Atomic Energy, November 1964.

presented by British officials.
Atomic Energy, held in Geneva in September 1979.
Part I contains 17 papers dealing with
and Part II contains 26

continued. It is divided into two parts. The first part is devoted to the study of the problems of particle interactions and of the problems of particle production. The second part is devoted to the study of the problems of particle decay and of the problems of particle scattering.

[illegible]

I deal with particular problems in various papers, and with the study of Part II deal in detail with various problems, and with their interplay, described in Part I. In Part II deal in detail with various problems, and with their interplay, described in Part I.

such as the *Flora of Hawaii* and the *Flora of the Hawaiian Islands*, which are the first 6 volumes of the series. The first 6 volumes contain all the Hawaiian names of the plants. The first 6 volumes contain all the Hawaiian names of the plants. The first 6 volumes contain all the Hawaiian names of the plants.

in a paper by H.L. Volpert, *ibid.* (2), 1971, and references therein.

(continued from page 9)

[illegible]

and Middle Ages (Vol. 1). The other 10 volumes are in the process of publication. The series is published by the University of Chicago Press.

[illegible]

has been shown that the "beat" frequencies, or ω_1 , ω_2 , ω_3 , and ω_4 , are given by $\omega_1 = \omega_2 = \omega_3 = \omega_4 = \omega_0$, where ω_0 is the natural frequency of the system. The natural frequency of the system is given by $\omega_0 = \sqrt{k/m}$, where k is the spring constant and m is the mass of the system. The natural frequency of the system is given by $\omega_0 = \sqrt{k/m}$, where k is the spring constant and m is the mass of the system.

...the ...
...the ...
...the ...

RECEIVED AT THE
LIBRARY OF THE
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WASHINGTON, D.C.

10/10/1968

Reports of Soviet Espionage, 1941-1945
Spectrum of Fragments of Espionage Platform of
Communism, 1941-1945

Abstracts of the Proceedings of the 1964 Annual Meeting of the American Society of Plant Pathologists, held at the University of California, Davis, California, August 1-5, 1964.

~~(Secret)~~ V.P.
Report 2022)
Includes photographs U.S. Navy, C.I.
includes material from V.P. Inventory.

Lambert, V.L. Contractor, and V.L. Lambert
Platoon Cross Section Station
of 1 to 11 M.V. Platoon Cross Section

Blade, S.F., San Francisco City of 300
and Blade-28 as Blade-27, Blade-27,
and Blade-23, Blade-23, Blade-23,
of Blade-23, Blade-23, Blade-23,

[illegible]

Adkins, E. O., Value of American Products of Domesticity, (Washington, D. C., U. S. Bureau of Economic Warfare, 1940).

Special Agent in Charge, Federal Bureau of Investigation, Washington, D. C.

5700

~~CONFIDENTIAL~~



100

5. (4)
AUTHORS:

~~Ershler, B. V.~~, Nezhevenko, M. A.,
Myasishcheva, G. G.

SOV/20-126-1-34/62

TITLE:

The Mechanism of the Radiation Decomposition of Hydrogen Peroxide (Mekhanizm radiatsionnogo raspada perekisi vodoroda)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 126 - 129 (USSR)

ABSTRACT:

The papers on the decomposition mentioned in the title (Refs 1-9) did not compare the yield $G_{H_2O_2}$ with the data of A. O.

Allen (Ref 10) concerning the radiolysis of water by γ -rays. These data may be represented by the equation (I) $(2k + 1)H_2O =$

$= (2m + n)H_2O = nH + mOH + lH_2O_2 + kH_2$, where k, l, m, n are

Allen's coefficients, which give the quantity of the individual particles formed by the absorption of 100 ev radiation. The authors wish to prove that such a comparison may contribute towards clearing up the entire mechanism. They carried out the radiolysis in the absence of H_2 and O_2 by blowing nitrogen through the liquid. As further reactions, which develop with-

Card 1/3

The Mechanism of the Radiation Decomposition of
Hydrogen Peroxide

SOV/20-126-1-34/62

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii
nauk SSSR (Institute of Theoretical and Experimental Physics
of the Academy of Sciences, USSR)

PRESENTED: January 28, 1959, by A. I. Alikhanov, Academician

SUBMITTED: January 26, 1959

Card 3/3

S/089/60/009/01/01/011
B014/B070

AUTHORS: Ershler, B. V., Torlin, B. Z., Suvorov, L. Ya.

TITLE: On the Theory of the Stability of a Homogeneous Boiling
Water Reactor /9

PERIODICAL: Atomnaya energiya, 1960, Vol. 9, No. 1, pp. 5-9

TEXT: First, the kinetic equations of a homogeneous boiling water reactor are developed by taking account of the volume boiling of the moderator (water). From these equations the following conclusions can be drawn:
(1) For slight superheating (by some degrees), the hydromechanical mechanism of boiling can set in in a homogeneous boiling water reactor.
(2) The magnitude of stationary superheating Δt_0 for the hydromechanical mechanism of boiling is determined by the conditions of motion of boiling water existing in the reactor. The quantity Δt_0 is characteristic of these working conditions. (3) An analysis of the kinetic equations shows that in a given range Δt_0 values exist which correspond to stable working conditions in a wide range of power. If Δt_0 goes beyond the

✓C

Card 1/2

On the Theory of the Stability of a
Homogeneous Boiling Water Reactor

S/089/60/009/01/01/011
B014/B070

allowed range, the reactor becomes unstable, and pulse conditions result even for small powers. The upper limit of the range of Δt_0 increases with increase of pressure. (4) Stability becomes better when the moisture content of the moderator or Δt_0 becomes smaller or the pressure becomes higher. (5) Under pulse conditions the amplitudes of all parameters become smaller when the pressure increases leaving the conditions of water flow unchanged. (6) The volume boiling can be determined by measuring superheating. The equations were analyzed by I. L. Il'ina, A. S. Kronrod, and Z. S. Ryabova. The PBM(RVM) computer constructed by N. I. Bessonov was used. A. I. Alikhanov and A. D. Galanin were interested in the work. There are 1 figure and 8 references: 3 British and 5 Soviet.

SUBMITTED: July 24, 1959

✓C

Card 2/2

FIRSOV, V.G.; ERSHLER, B.V.

Radiolysis of aqueous solutions of uranium (IV) and iron
(II) sulfates at elevated temperatures. Zhur.fiz.khim. 35
no.8:1887-1888 Ag '61. (MIRA 14:8)
(Uranium sulfate)
(Iron sulfate)
(Radiation)

24061
S/020/61/138/004/022/023
B103/B203

5.4600

AUTHORS: Firsov, V. G. and Ershler, B. V.

TITLE: Usability of Allen's model in radiolysis of aqueous solutions

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 138, no. 4, 1961, 884-885

TEXT: On the basis of published data, the authors attempted to prove the usability of the second approximation of the model by A. O. Allen (see below, Ref. 1) in radiolysis of titanium salts. The application of Allen's model permits two approximations: (1) the yields of H_2 , H_2O_2 , H, and OH do not depend on composition and concentration of the solution; (2) the irregular space distribution of primary radiolytical products is neglected. Assumption (1) was confirmed for many solutions by experiments and theoretical calculations. The correctness of assumption (2), however, has never been checked experimentally. It was theoretically discussed by B. V. Ershler and G. G. Myasishcheva [Abstracter's note: no reference given] for solutions containing H_2O_2 , H_2 , and O_2 . B. V. Ershler (Ref. 8:

Card 1/5

24061

S/020/61/138/004/022/023
B103/B203

Usability of Allen's model in ...

DAN, 129, 866 (1959)) has shown that the following two rules must hold in the case of validity of Allen's model and of the equations of homogeneous chemical kinetics for radiolytical processes: (1) If, for the steady state of the irradiated solution with a certain intensity I_1 of the absorbed radiation, the logarithm of the concentration of all particles in the solution was determined as a function of the logarithm of the concentration of any particle, then all these curves are shifted, on transition to the intensity I_2 , along both axes in parallel to each other by the value $\log(I_2/I_1)^{1/2}$ without changing their shape. (2) If, for a radiolytical process with an intensity I_1 , the yield of any particle was determined as a function of the logarithm of the concentration of another particle, then this curve is shifted, with an intensity I_2 , in parallel along the axis by the value $\log(I_2/I_1)^{1/2}$ without changing its shape. The two " $I^{1/2}$ rules" (1) and (2) must hold for any reactions in an irradiated solution which corresponds to Allen's model if steady concentrations or yields therein are unique functions of the concentration of any particle.

Card 2/5

24061

S/020/61/138/004/022/023

B103/B203

Usability of Allen's model in ...

Fig. 1 shows two dependence curves of the yield of radiolytical oxidation of solutions of Ti^{3+} sulfate of $\log [Ti^{3+}]$ determined with exclusion of oxygen in irradiation in a cobalt source. Curve 1 was plotted at $I_1 = 0.0364 \cdot 10^{19}$ ev/l.sec, curve 2 at $I_2 = 1.00 \cdot 10^{19}$ ev/l.sec. In fact, the two curves agree rather accurately in their shape, are parallel, and the distance between them on the $\log [Ti^{3+}]$ axis, 0.70-0.72, corresponds well to the value $\log(I_2/I_1)^{1/2} = 0.72$. From this confirmation of the $I^{1/2}$ rule, the authors conclude that Allen's model gives a good approximation for the solution of the salts of trivalent titanium. The dependence of the yield on the radiation intensity evidently proves directly that an interaction exists between the particles formed in different tracks. The proof of the $I^{1/2}$ rule shows that this interaction is well expressed by equations of homogeneous kinetics. The authors continue their study of Allen's model to detect, by the methods of the $I^{1/2}$ rule, those systems and ranges of concentration and intensities in which this method for the analysis of mechanisms of radiolytical processes can be used. There are 1 figure and 8 references: 1 Soviet-bloc and 7 non-Soviet-bloc. The three references to the English-language publications read as follows: Ref. 1: A.O.Allen, Card 3/5

24061

S/020/61/138/004/022/023
B103/B203

Usability of Allen's model in ...

J. Phys. and Coll. Chem. 52,479 (1948); Ref. 2: A.O. Allen et al. ibid. 56,575 (1952); Ref. 3: A.O. Allen, Rad. Res., 1,85 (1954).

ASSOCIATION: Institut teoreticheskoy i eksperimental'noy fiziki Akademii nauk SSSR (Institute of Theoretical and Experimental Physics of the Academy of Sciences USSR)

PRESENTED: January 23, 1961, by A. I. Alikhanov, Academician

SUBMITTED: January 23, 1961

Card 4/5

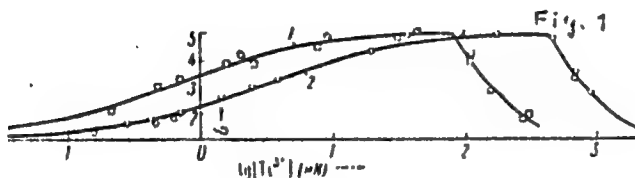
24061

S/020/61/138/004/022/023

B103/B203

Usability of Allen's model in ...

Fig. 1: Legend: Fulfillment of the $I^{1/2}$ rule in solutions of Ti^{3+} salts. Curves of the dependence G (the number of oxidized ions per 100 ev) on $\log [Ti^{3+}]$. Intensities I_1 and I_2 are mentioned in the text .



Card 5/5

ERSHLER, B.V.; FIRSOV, V.G.

The $11/2$ Law on the radiolytic oxidation of iron ions by
hydrogen atoms, and the mechanism of the process. Dokl. AN SSSR
139 no.3:662-664 J1 '61. (MIRA 14:7)

1. Predstavleno akademikom A.N. Frumkinym.
(Iron) (Oxidation) (Radiation)

3/844/62/000/000/015/129
D290/D307

AUTHORS: Dolin, P. I. and Grshler, B. V.

TITLE: Recent results concerning the mechanisms of radiation-chemical changes in aqueous solutions

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 87-101

TEXT: The authors review many recent results on the irradiation of aqueous solutions. They consider at length new evidence supporting the theory that H and OH radicals are the main agents of chemical change in aqueous solutions and discuss briefly the possibility that primary products of irradiation (e.g. H_2O^+ ions and electrons) participate directly in chemical reactions. It is concluded that physical methods must be used to study directly the primary processes following irradiation but that chemical methods can be of some value if used in conjunction with suitable models or irradiation

Card 1.2

Recent results concerning ...

3/844/62/000/000/015/129
0290/0507

of solutions (e.g. the radical-diffusion or approximate model discussed in this review). There are 9 figures and 2 tables.

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki AN SSSR (Institute of Theoretical and Experimental Physics, AS USSR); Institut elektrokhimii AN SSSR (Institute of Electrochemistry, AS USSR)

Card 2/2

43225
S/844/62/000/000/016/129
D290/D307

11.1190

AUTHORS: Ershler, B. V. and Myasishcheva, G. G.

TITLE: On the mechanisms of the radiolysis of aqueous solutions of H_2 , O_2 , and H_2O_2

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo ANSSSR, 1962, 114-121

TEXT: The authors consider 8 possible reactions that can occur during radiolysis of aqueous solutions of H_2 , O_2 , and H_2O_2 and deduce equations for the kinetics of radiolysis and for the variations in the yields of H_2 , O_2 , and H_2O_2 with the concentrations of the initial solutions and the intensity and type of radiation. The theoretical predictions are in very good agreement with many published results. The range of validity of the approximations used in the theory is discussed. It is also shown that the existence of the

Card 1/2

3075
S/076/62/036/004/004/012
B101/B110

J. 4600

AUTHORS:

TITLE:

Ershler, B. V., and Myanishcheva, G. G.

Applicability of an approximate model to radiolytic reactions of hydrogen, oxygen, and hydrogen peroxide in aqueous solution

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 4, 1962, 726-733

TEXT: On the basis of the approximate Allen model (see below), equations are derived for radiolysis processes, and their agreement with experimental data of other scientists is checked. The following reactions are considered: $H_2O_2 + H = H_2O + OH$ (1); $H_2 + OH = H_2O + H$ (2); $H_2O_2 + OH = H_2O + HO_2$ (3); $HO_2 + H = H_2O_2$ (4); $HO_2 + HO_2 = H_2O_2 + O_2$ (5); $H + O_2 = HO_2$ (6); $H_2O_2 + HO_2 = H_2O + O_2 + OH$ (7); $H + H = H_2$ (8). The dependence of the reaction rate w_1 on the reaction constant k_1 and the particle concentration is noted for each reaction. For the yield G_q of each particle q , $G_q = G_q^0 + \sum G_i$ holds. From this, the following equations

1/4

Applicability of an approximate ...

S/076/62/036/004/004/012
B101/B110

are derived: $G_{H_2} = L + 1 - \alpha M$; $G_{O_2} = L + (1 - \alpha)M$; $G_{H_2O_2} = G_{H_2} - 2G_{O_2}$;

(II), where $\alpha = [H_2]/([H_2] + A[H_2O_2])$; $L = x + k - \alpha M - 1$;

$M = (y + Bx^{1/2})[H_2O_2]\beta^{1/2}$; $\beta = 100N/I$, (N = Avogadro's number, I = intensity of radiation). For the calculation of x , y and I , the following equations

are written down: $x^{1/2} = -Q + \sqrt{Q^2 - P}$; $Q = 0.5(C[O_2] + (1 - \alpha)B[H_2O_2])\beta^{1/2}$;

$y = 0.5D^{-1/2}(\sqrt{E^2x + 4(b - x)} - Ex^{1/2})$; $P = k - \alpha m - 1 - Dy^2 - \alpha y[H_2O_2]\beta^{1/2}$;

$b = m + 1 - k$. For the constants: $A = k_3/k_2$; $B = k_1/k_8^{1/2}$; $C = k_6k_8^{1/2}$;

$D = k_5/k_7^2$; $E = k_4/k_5^{1/2} \cdot k_8^{1/2}$; $F = k_1 \cdot k_5^{1/2}/k_4$; $G = k_1/k_6$. Calculations on

the basis of the equation system II for H_2O_2 solutions, saturated with H_2

at 1 atm; solutions containing only H_2O_2 ; solutions of O_2 ; solutions with

comparable content of H_2 and O_2 , and a solution saturated with H_2 at 1 atm, X

produced good agreement with the experimental data of Allen and other

scientists. The applicability of the model in dependence on the assumed

Card 2/4

Applicability of an approximate ...

S/076/62/036/004/004/012
B101/B110

approximation (equal distribution and simultaneous development of the radicals) is discussed. The $I^{1/2}$ relation may be used as criterion for the even distribution of the radicals in the solution. For stationary concentration, G_{H_2} , G_{O_2} and $G_{H_2O_2}$ is equated with zero in the equation

system (II) and the following equations are obtained:

$$\begin{aligned} [H_2O_2] &= 1\beta^{1/2}/(y + Bx^{1/2}); [H_2] = [H_2O_2]A(x + k)/(b - x); \\ [O_2] &= (1/Cx^{1/2}(Dy^2\beta^{-1/2} + y[H_2O_2])); y = (1/2D^{1/2})[\sqrt{E^2x + 4(b - x)} - Ex^{1/2}] \end{aligned}$$

(IV). In agreement with the experimental data $[H_2O_2]$ is found to approach a minimum asymptotically at $[O_2] \rightarrow 0$, and a maximum at $[O_2] \rightarrow \infty$; $[H_2] \rightarrow \infty$ at $[O_2] \rightarrow 0$. The $I^{1/2}$ relation is shown by the fact that if there is a change of the intensity from I_1 to I_2 , the curves $\log[H_2]$, $\log[H_2O_2]$ versus $\log[O_2]$ are displaced along both axes by $\log(I_1/I_2)^{1/2}$.

The assumption of two types of reducing particles, H and H^- , proposed by Allen, is unnecessary for the explanation of experimental data existing at

Card 3/4

Applicability of an approximate ...

S/076/62/036/004/004/012
B101/B110

present. There are 7 figures and 2 tables. The four most important English-language references read as follows: A. O. Allen, J. Phys. Chem., 52, 479, 1948; A. O. Allen, C. J. Hochanadel, J. A. Chormley, T. W. Darvis, J. Phys. Chem., 56, 575, 1952; A. O. Allen, Radiation Res., 1, 85, 1954; A. O. Allen, J. Phys. Chem., 63, 928, 1959.

SUBMITTED: June 23, 1960

Card 4/4